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# A New Species of *Meliosma* (Sabiaceae) from Southeastern Brazil and Notes on the Genus

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**ABSTRACT.** *Meliosma chartacea* Lombardi (Sabiaceae), a new species from southeastern Brazil, is described from Minas Gerais and Espírito Santo. It is characterized by its entire internal petals, very short petiole (generally less than 1 cm), brochidodromous venation, and entire leaf margin. A key to determine the species from southeastern Brazil is presented. Lectotypes and new synonyms are proposed for formerly described Brazilian species: *M. sellowii* Urban and *M. itatiaiae* Urban.

**RESUMO.** *Meliosma chartacea* Lombardi (Sabiaceae), uma nova espécie sudeste do Brasil é descrita para Minas Gerais e Espírito Santo, esta espécie é caracterizada pelas pétalas internas inteiras, pecíolos muito curtos (geralmente com menos do que 1 cm), venação broquidódroma e pela margem inteira das folhas. É apresentada uma chave para a determinação das espécies do sudeste do Brasil. Lectótipos e novos sinônimos são propostos para as espécies brasileiras anteriormente descritas: *M. sellowii* Urban e *M. itatiaiae* Urban.

**Key words:** Brazil, IUCN Red List, *Meliosma*, Sabiaceae, South America.

The Sabiaceae (including the Meliosmaceae) currently include three genera and between 80 and 90 species (Arbeláez, 2004; Aymard & Cuello, 2005) distributed in the tropical and subtropical areas of Asia and the Americas (Kubitzki, 2004). Two genera occur in the Neotropics: *Ophiocaryon* Endlicher, restricted to the rainforests of northeastern South America (Barneby, 1972; Aymard & Cuello, 2005; Aymard C. & Daly, 2006), and *Meliosma* Blume, an amph-Pacific genus disjunct between Southeast Asia and tropical America, and found mostly south of Central America and in the tropical Andes.

*Meliosma* is traditionally subdivided into two subgenera, *Meliosma* and *Kingsboroughia* (Liebermann) Beusekom (Van Beusekom, 1971). The former includes sections *Meliosma* and *Lorenzanea* (Liebermann) Beusekom, while the latter is divided into sections *Kingsboroughia* and *Hendersonia* Beusekom. All Neotropical species are included in section

*Lorenzanea*, except *M. alba* (Schlechtendal) Walpers, disjunct between southern Mexico and southeastern Asia, which is placed in section *Kingsboroughia* (Van Beusekom, 1971).

The most recent taxonomic study of the genus, although incomplete, was by Van Beusekom (1971), who revised all the taxa of the genus with the exception of the exclusively American section *Lorenzanea*. He recognized 15 species in the three sections and suggested the unstudied American section would not exceed 10 species.

The most recent treatment of Neotropical *Meliosma* was carried out by Urban (1900), who described 17 species: 11 from Mexico, Central America, and the Caribbean islands; one from Colombia; and five from Brazil. Since then, 40 additional new species from South America have been described (Kuhlmann, 1935; Lasser, 1943; Cuatrecasas, 1949, 1955, 1959, 1988; Steyermark, 1952, 1953, 1966; Cuatrecasas & Idrobo, 1955, 1988; Steyermark & Maguire, 1967; Gentry, 1986, 1992; Idrobo, 1988; Steyermark & Gentry, 1992; Aymard C. & Cuello A., 1994; Arbeláez, 2004; Cornejo & Bonifaz, 2006), but only one new species has been described from Brazil; this species is restricted to the Amazon Basin (Kuhlmann, 1935).

This increase in species number is attributed to the common local endemism that occurs in the family (Arbeláez, 2004) and is reported by Van Beusekom (1971) as a consequence of the pollination mechanism of the minute flowers, which eject the pollen on the thecae in a single burst at anthesis. This probably entails a great rate of geitonogamy and consequently the establishment of local morphological variations (Van Beusekom, 1971).

The small number of new taxa described from Brazil is certainly due to insufficient collections, which is partially justified by the difficulty of collecting flowering specimens (Arbeláez, 2004) and the absence of taxonomists working on this family in Brazil. As shown by the floristic surveys in other South American countries (Cuatrecasas & Idrobo, 1955; Steyermark & Gentry, 1992; Arbeláez, 2004), additional botanical exploration always reveals many unknown species.



While starting a revisionary study of the family for Brazil, a very preliminary look at the meager collections deposited in principal herbaria in southeastern Brazil has revealed several undescribed *Meliosma* species, clearly distinct from those described by Urban (1895, 1900). Of these new species, thus far only one has sufficient specimens to allow a proper description, which is presented here.

***Meliosma chartacea*** Lombardi, sp. nov. TYPE: BRAZIL. Minas Gerais: Santa Maria do Salto, Faz. Duas Barras, 16°24'12.1–29.5"S, 40°02'36.6–33.7"W, 760–850 m, 25 Aug. 2003, J. A. Lombardi 5537, J. R. Stehmann, R. C. Mota & L. G. Temponi (holotype, BHCB; isotypes, HRCB, MO). Figures 1, 2.

Haec species *Meliosmae itatiaiae* Urban quoad laminam foliarem magnam chartaceam spathulatam et petiolum interdum ad pulvinum redactum similis, sed ab ea foliis marginibus integris venatione brochidodroma et petalis internis apice integris differt.

Trees, treelets, or shrubs, 5–20 m tall; branches subterete, shiny, furrowed, lenticellate, soon corky, shoot apex puberulous, with very short and inconspicuous trichomes, or sparsely strigose, glabrescent; axillary buds strigose. Leaves alternate to subopposite; petioles (0.4–)0.7–1(–1.4) cm, cylindrical, swollen and pulvinus-like, drying cracked and scaly; blades (13.6–)26–31.6(–61) × (4.2–)7–10(–12.5) cm, spatulate; base cuneate-rounded, apex acute or acuminate; margin entire, thickened by a fimbrial vein; blade chartaceous, drying brown, glabrous on both sides except for very inconspicuous and sparse short trichomes along the primary vein abaxially; venation brochidodromous, primary vein lenticellate, immersed adaxially, prominent abaxially, secondary veins flat and light brown adaxially, prominent abaxially, gradually arched toward margin, tertiary veins and veinlets very lightly prominent, sometimes light brown adaxially, flat and light brown abaxially. Inflorescence a leafy terminal or subterminal panicle, 2 to 3 × branched, ca. 29–42 × (8–)18–28 cm; axes lenticellate, from sparsely puberulous at base to densely puberulous at apex, glabrescent, corky on infructescence, with leafy and scale-like bracts and abortive strigose vegetative buds, branches sparsely lenticellate, densely puberulous or glabrous except at apex; leafy bracts occasional, ca. 6.2 × 2.2 cm, sessile or short petiolate (ca. 0.5 cm), elliptic, apex acute, base rounded; scale-like bracts 0.5–3 mm, aciculate to triangulate, strigose or sparsely pilose on the margin; pedicels absent; bracteoles 2 to 3, 0.5–0.8 × 0.7–1 mm, triangular, minutely ciliate, very similar to sepals. Flower buds ca. 2 mm diam., spherical,

green, opened flowers not seen; sepals 5, 0.8–1 × 0.8–1.2 mm, triangulate, ± equal in size or the outer slightly smaller, carnose, ciliolate, otherwise glabrous; petals 5, unequal, with 3 larger outer petals and 2 smaller inner ones, the outer petals oblate, cucullate, carnose, ciliolate, otherwise glabrous, outermost 1.3–1.5 × 1.1–1.6 mm, the internal two 1.4–1.8 × 1.3–2; inner petals 1.4–1.5 × 0.4–0.5 mm, reduced, papery, elliptic, apex acute and ciliolate; fertile stamens 2, ca. 1 mm, opposite inner petals and adnate to ca. 1/4 of their length, the filaments ligulate, incurved at apex, anthers ca. 0.7 × 0.9 mm, thecae suborbicular, transversely dehiscent before anthesis, separate and subtended by the thickened connective; staminodes 3, ca. 1 × 0.7 mm, opposite to outer petals and partially adnate to them, irregular, asymmetric, with 1 or 2 hemispheric cup-like depressions in the apex, these cover the adjacent thecae of the fertile stamen while inside the bud; disk consisting of 5 vestigial teeth, 0.1–0.2 mm; pistil 0.8–1.4 mm, subovate, laterally flattened, 2-locular, with 2 ovules in each locule, style 0.3–0.4 mm, cylindrical, stigmas minute, 2-lobed. Immature (?) drupes (1.7–)2–2.3 (–2.8) × 1.6–1.9 cm, asymmetric, green to light green, drying verrucose and brown, endocarp 1.4–1.7 × 1.5–1.6 cm, subspherical, smooth, cream; seeds not seen.

*Distribution, habitat, and IUCN Red List category.* *Meliosma chartacea* is restricted to the rainforests of the Brazilian Atlantic Range and collected in five localities in the states of Minas Gerais, Espírito Santo, and São Paulo, where it occurs at altitudes of 400–850 m. It has been reported in disturbed remnants of wet forest, on forested slopes, and along streams. This species has also been reported to occur inside different conservation areas, three in Santa Teresa Municipality, Espírito Santo—the Santa Lúcia Biological Station (ca. 440 ha.), the Augusto Ruschi Biological Reserve (3598.41 ha.), and the São Lourenço Biological Station (22 ha.) (Mendes & Padovan, 2000); and two in São Paulo State—the Jurupará State Park (26,250 ha.) and the Serra do Mar–Núcleo Pedro de Toledo State Park (55,462 ha.). It is thus protected, at least in this part of its distribution; nonetheless, it is considered Endangered (EN) according to IUCN Red List criteria (IUCN, 2001) because its area of occurrence is less than 5000 km<sup>2</sup>, it is known to occur only at five locations, and a continuing decline of its area of occupancy is inferred for habitat fragmentation.

*Phenology.* Collected with flowers in August, December, and January, and with fruits from March to May and July to October.

*Etymology.* The specific epithet of this species refers to the chartaceous texture of its leaves.



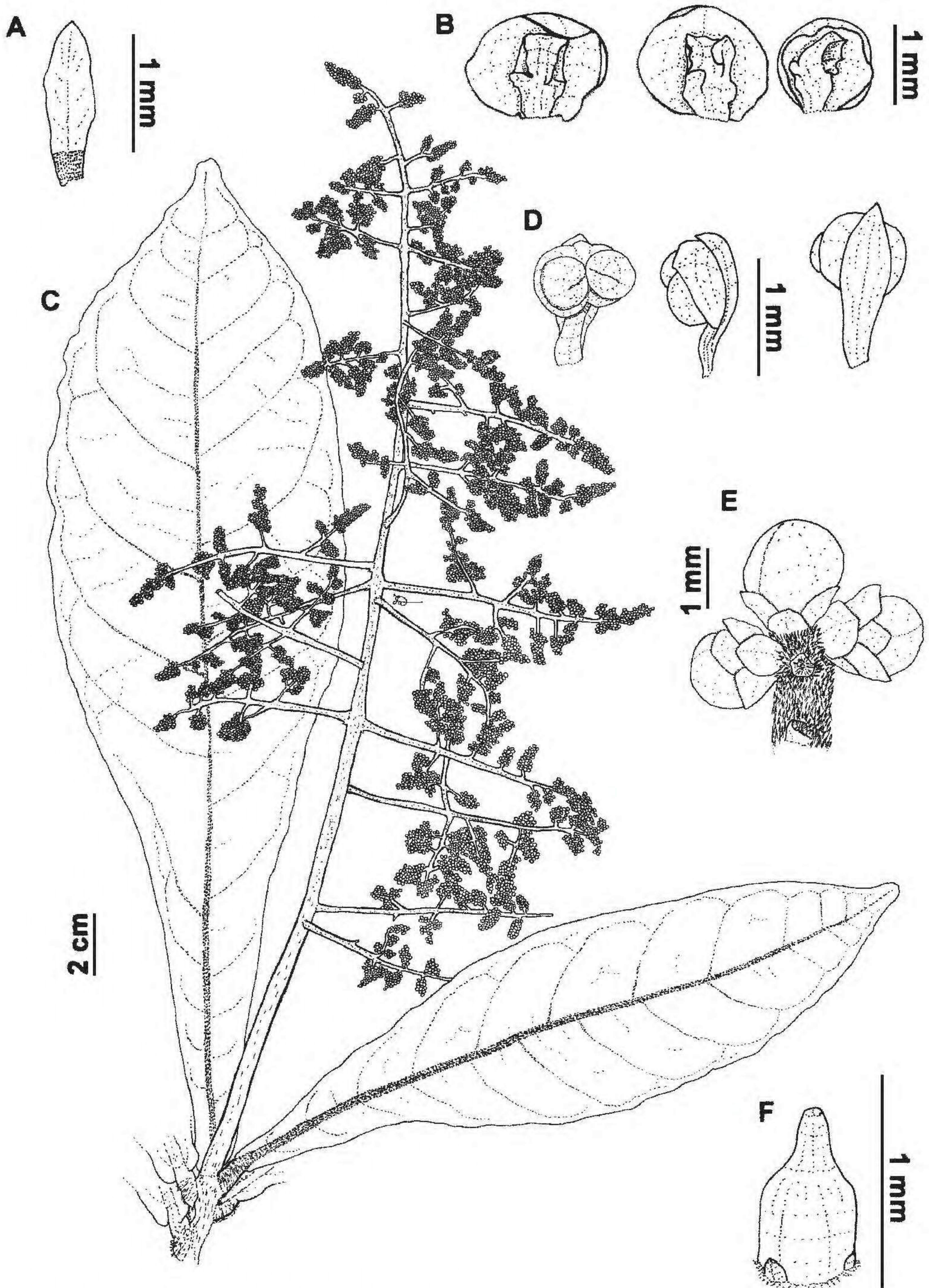


Figure 1. *Meliosma chartacea* Lombardi. —A. Inner petal. —B. Outer petals with adnate staminodes. —C. Branch with leaves and inflorescence. —D. Stamen with adnate inner petal: ventral, lateral, and dorsal views. —E. Apex of inflorescence branch with flower buds and subjacent bracteoles, one bud missing. —F. Pistil with two teeth of the disc. Drawn by the author from the holotype *Lombardi* 5537 (BHCB).





Figure 2. *Meliosma chartacea* Lombardi showing immature fruits. Photo by the author from the holotype Lombardi 5537 (BHCB).

*Vernacular.* Unknown.

*Discussion.* *Meliosma chartacea* resembles *M. itatiaiae* because of its large spatulate and short-petiolate leaves. Nevertheless, *M. itatiaiae* has conspicuous serrate leaf margins (vs. entire margin in *M. chartacea*), semicraspedodromous venation (vs. brochidodromous), and a bifid inner petal (vs. entire).

The “disk” is composed of five reduced teeth at the ovary base. It was seen in mature buds from the holotype, but was not observed in the flowered paratypes with younger buds. In some specimens of *Meliosma sellowii*, the disc was not found in bud, while in others it was more or less defined. Although, herein, this structure receives the name it is given in the literature (Urban 1895, 1900; Van Beusekom, 1971), some doubts remain about its nature and possible functions in the flower, if any at all, because of the absence of anatomical and developmental studies.

The specimens collected in Santa Teresa, Espírito Santo; in Santa Maria do Salto, Minas Gerais; and in Ibiúna, São Paulo, showed different flowering periods (December–January in the first, and August for the other two). These discrepancies could be the result of insufficient sampling or may reflect a real variation of phenology. The fruits apparently remain on the plant for a long time (Fig. 2). No variation in fruit color was observed in the two different collections of the species by the author, and no other coloration is reported in the collection labels of the paratypes.

*Paratypes.* BRAZIL. **Espírito Santo:** Santa Teresa, 30 Jan. 1986, *W. Boone* 1068 (HRCB, MBML); Santa Teresa, Nova Lombardia, Res. Biol. Augusto Ruschi, 11 Dec. 2001, *L. Kollmann* 5183 (HRCB, MBML); Santa Teresa, São Lourenço, Mata Fria, 2 Dec. 1998, *L. Kollmann* 1167 (HRCB, MBML); Santa Teresa, São Lourenço, Est. Biol. de São Lourenço, 21 Aug. 2001, *L. Kollmann* 4383 (HRCB,

MBML); Santa Teresa, Est. Biol. de Santa Lúcia, 19 July 1984, *W. Boone* 262 (HRCB, MBML); 24 Mar. 1988, *H. Q. Boudet-Fernandes* 2439 (HRCB, MBML); 30 Mar. 1999, *L. Kollmann* 2322 (HRCB, MBML); 26 May 1999, *Lopes* 749 (HRCB, MBML); 28 Aug. 1993, *L. D. Thomaz* 962 (MBML); 19 Apr. 1994, *L. D. Thomaz* 1664 (MBML); 27 July 1993, *L. D. Thomaz* 1823 (MBML, Herbarium of the Universidade Federal do Espírito Santo). **Minas Gerais:** Santa Maria do Salto, Fazenda Duas Barras, ca. 16°24'S, 40°03'W, 10 Mar. 2004, *J. A. Lombardi* 5972 (BHCB). **São Paulo:** Ibiúna, Parque Est. de Jurupará, caminho da Faz. Tucano, 11 Aug. 1995, *O. T. Aguilar & J. A. Pastore* (SPSF); Miracatu, Parque Est. de Jurupará, estrada do Mono, 6 Sep. 1995, *J. B. Baitello & O. T. Aguilar* 805 (SPF, SPSF); Peruíbe, Parque Est. da Serra do Mar, Núcleo Pedro de Toledo, trilha do Rio do Ouro, 13 Mar. 2005, *R. Cielo-Filho* 378 (HRCB, SPSF).

KEY TO THE DESCRIBED SPECIES OF *MELIOSMA* IN SOUTHEASTERN BRAZIL

- 1a. Leaves spatulate, large, (13.6–)26–31.6(–61) × (4.2–)7–14.5(–20.5) cm, petiole relatively short, sometimes swollen and without distinct pulvinate and canaliculate parts.
  - 2a. Inner petals bifid, lobes divergent, conspicuous, venation semicraspedodromous, leaf margin conspicuously serrate. . . . . *M. itatiaiae*
  - 2b. Inner petals entire, venation brochidodromous, leaf margin entire . . . . . *M. chartacea*
- 1b. Leaves elliptic to obovate, (2.9–)3.5–15.7(–21.2) × (0.9–)1.6–5.4(–6.1) cm, conspicuously petiolated, petiole having distinct pulvinate and canaliculate parts . . . . . *M. sellowii*

NOMENCLATURAL NOTES

***Meliosma itatiaiae*** Urban, Symb. Antill. 1(3): 510. 1900. TYPE: Brazil. Minas Gerais: Itatiaia, Fazenda do Taquaral, 26 Sep. 1874, *Glaziou* 7565 (lectotype, designated here, P [3 sheets, 2 of these pictured in the same F 35982]; duplicates, F [fragm.], K).

*Discussion.* The holotype of *Meliosma itatiaiae*, pictured in F 13375, was destroyed in the Botanical Museum Berlin-Dahlem Herbarium (B) (Hiepko, 1987), and the name therefore requires lectotypification. The proposed lectotype was chosen because it is more complete and the three sheets are clearly part of the same gathering, including cauline large leaves on one sheet and inflorescence parts on the other two, so that the three sheets comprise the lectotype (cf. Art. 8.3 of the *International Code of Botanical Nomenclature* [McNeill et al., 2006]).

*Meliosma itatiaiae* has been reported in the Mantiqueira Range, on the border between Rio de Janeiro, Minas Gerais, and São Paulo states. The only collection outside this range (Igaratá) is only ca. 150 km south from the range outskirts.

*Selected specimens examined.* BRAZIL. **Rio de Janeiro:** Engenheiro Passos, *Hatschbach* 45530 (US); Itatiaia, *Altamiro & Walter* 139 (RB), *Campos Porto* 821 (RB), *Glaziou*



6697 (K, P), Kuhlmann s.n. (RB 258917), Silveira s.n. (RB 2233); Rezende, Martinelli 3258 (K, NY). **São Paulo:** Piquete, Arzola & Sene 703 (SPSF); Santa Isabel, Igaratá, M. Kuhlmann 2550 (SP), M. Kuhlmann s.n. (SP 36290), M. Kuhlmann s.n. (SP 66057).

**Meliosma sellowii** Urban, Ber. Deutsch. Bot. Ges. 13: 212. 1895. TYPE: Brazil. s. loc., Sellow 2205 c. 2217 (holotype, B not seen [image seen; another sheet was destroyed = F 13377]; isotype, K).

*Meliosma sinuata* Urban, Ber. Deutsch. Bot. Ges. 13: 212. 1895. TYPE: Brazil. Rio de Janeiro: prope Petrópolis, 20 Nov. 1887, Glaziou 16707 (lectotype, designated here, P; isotype, K).

*Meliosma brasiliensis* Urban, Ber. Deutsch. Bot. Ges. 13: 216. 1895. TYPE: Brazil. Rio de Janeiro: Alto Macahé, 1500 m, 23 Nov. 1888, Glaziou 17729 (lectotype, designated here, P [F 35984]; duplicates, F [fragm.], P, US).

*Meliosma glaziovii* Urban, Symb. Antill. 1(3): 508. 1900. TYPE: Brazil. Rio de Janeiro: entre Nova Friburgo et le Alto [Macahé], 9 Oct. 1890, Glaziou 12131 (lectotype, designated here, P [F 35983]; duplicates, F [fragm.], K, P, US).

**Discussion.** The holotype of *Meliosma sinuata* (pictured in F 13378), the syntypes of *M. brasiliensis* (Glaziou 17729 [F 13372] and Glaziou 8099), and the syntypes of *M. glaziovii* (Glaziou 12131 [F 13374] and Glaziou 19587) were destroyed in the Botanical Museum Berlin-Dahlem Herbarium (B) (Hiepko, 1987), and the names therefore require lectotypification.

For lectotypification of *Meliosma brasiliensis*, the isosytype Glaziou 8099 (Rio de Janeiro, Corcovado, Cova da Onça, 23 Nov. 1875 [F, K, P]) was also considered, but Glaziou 17729 was chosen as the more complete specimen. Likewise, for lectotypification of *M. glaziovii*, the isosytype Glaziou 19587 (Alto Macahé, 5 Oct. 1891 [K, P]) was considered, but Glaziou 12131 was selected as more representative.

All the species described by Urban (1895, 1900) and here proposed as synonyms of *Meliosma sellowii* present slight variations of leaf shape and margin, indument, and inner petal apex. Intermediate states of these characteristics were seen in the many specimens collected in Santa Teresa, Espírito Santo State; Camanducaia, Minas Gerais State; and in the other localities represented by unique collections. Among the available names by priority, *M. sellowii* was the chosen name. It is the most frequently seen name on herbarium labels and in floristic and phytosociological studies (e.g., Jung-Mendaçolli, 1996; Kurtz & Araújo, 2000; Jurinitz & Jarenkow, 2003; França & Stehmann, 2004).

**Selected specimens examined.** BRAZIL. **Espírito Santo:** Santa Teresa, Est. Biol. de Santa Lúcia, Bausen 21 (HRCB,

MBML); Domingos Martins, Hatschbach & Silva 48663 (CEPEC, MBM, NY, US). **Minas Gerais:** Camanducaia, França 222 (BHCB, HRCB). **Paraná:** Antonina, Hatschbach 72720 (BHCB, MBM); Castro, Klein & Leite 12023 (RB); Guaratuba, J. M. Silva & Saldanha 1776 (BHCB, MBM); Morretes, J. M. Silva 1212 (BHCB, MBM). **Rio de Janeiro:** Pedra do Cônego, à Nova Friburgo, Glaziou 12401 (P [F 13374]); Rio de Janeiro, Kuhlmann s.n. (RB 24391); Cachoeiras de Macacu, Kurtz s.n. (RB 328374). **Santa Catarina:** Ibirama, L. B. Smith & Klein 7543 (F, K, NY, P, RB, US); Porto União, Klein & Smith 10827 (M); Rio do Sul, Reitz & Klein 7307 (K, M, NY, US). **São Paulo:** Cananéia, Ilha do Cardoso, Castro 16 (HRCB); Sete Barras, Parque Est. de Carlos Botelho, Farias et al. 707 (BHCB, ESA); Jundiá, Res. Biol. Mun. da Serra do Japi, Lombardi 6468 (HRCB); Pariquera-Açu, Udulutsch et al. 2613 (HRCB).

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